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Class: EE 104

Reference: Laboratory 8

About this lab: In this project, there are two parts, the first part is about using the YOLO5 to train the AI to recognize objects. The second one is the dancing challenge python game.

1. We use YAMOv5 to train the AI this time.

You need to install YOLO5 file from <https://github.com/ultralytics/yolov5>

Python 3.10.8

Latest CUDA from <https://developer.nvidia.com/cuda-downloads>

PyTorch from <https://pytorch.org/get-started/locally/>

PyCOCOTools from <https://github.com/philferriere/cocoapi.git>

Labelling Repo from <https://github.com/ivangrov/ModifiedOpenLabelling>

And pip install -r requirements.txt

1. After all the installation, download the images you want to train to C:\ModifiedOpenLabelling-main\images

Then run the ‘python run.py’ in cmd to label images with different names.

Then Split the data into training and validation in cmd with commend line ‘python train\_test\_split.py’

Drag files in train folder to train folder in C:\yolov5\datasets\coco128, and same with the files in lable folder.

In the end, you could train your model in yolo cmd with the command line ‘python train.py --img 415 --batch 16 --epochs 30 --data datasets/coco128\_ee104.yaml --weight yolov5s.pt –cache’

Wait for the computer to finish the 30 epochs. And you will get a command line shows that the trained result is saved to ‘run\train\exp(number)

Then run ‘python detect.py --source 0 --weights C:\yolov5\runs\train\exp2\weights\best.pt’ but remember to change the number of the exp. And the result will show on your computer screen!

1. Game Development – Dancing Challenge:

base on the slide to complete the basic structure of the game, add player2, and let the two players take turns to operate in rounds. If both players complete the same stage, they will enter the next stage and need to add more actions. At the same time, they will be replaced game music